

**PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0757-01-CT
Application for Initial Review No. 0757-01
Addendum received September 27, 2012**

Company: Powerscreen of California

Mailing Address: 10 Case Court
American Canyon, California 94503

Facility: Crushing and Screening Plants

Location: Various Temporary Sites, State of Hawaii

Initial Location: 95-109 Waikalani Drive, Mililani, Hawaii
(UTM Zone 4: East 601,609 North 2,373,982)

SIC Code: 1429 (Crushed and Broken Stone, Not Elsewhere Classified)

Responsible Official: Mr. Jay Wessell
CFO
(707) 253-1874

Contact: Mr. Fred Peyer
Environmental Management Consultant
95-109 Waikalani Drive
Mililani, Hawaii 96789
(808) 779-2948

Equipment:

1. 253 TPH TEREX/Pegson portable cone crushing plant, model no. Maxtrak 1000, serial no. PID10MXTCOMAB1734 (manufactured 2011), with:
 - a. 11'1" x 8'2" feed hopper;
 - b. Various conveyors;
 - c. Built-in water spray system; and
 - d. 350 HP Scania diesel engine, model no. DC-09 70 A, serial no. 6645850 (manufactured 2011) with Tier 4i SCR (selective catalytic reduction) NOx control unit.

BACKGROUND

Powerscreen of California has submitted an initial application to operate a portable self-powered crushing plant. The 253 TPH crushing plant consist of an cone crusher and various conveyors. The crushing plant is track mounted and powered by a 350 HP diesel engine generator (Tier 4i). The portable crushing plant and diesel engine generator will be limited to 2500 hours in any rolling twelve-month (12-month) period. Water sprays and a water truck will be used to control fugitive emissions.

Process

Raw material is dropped into the feed hopper by a loader and passed to the cone crusher. The crushed material drops onto a moving conveyor belt and is transported to the stockpile. The product material is conveyed to one stockpile.

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)

Title 11 Chapter 59, Ambient Air Quality Standards

Title 11 Chapter 60.1, Air Pollution Control

Subchapter 1, General Requirements

Subchapter 2, General Prohibitions

11-60.1-31, Applicability

11-60.1-32, Visible Emissions

11-60.1-33, Fugitive Dust

11-60.1-38, Sulfur Oxides from Fuel Combustion

Subchapter 5, Covered Sources

Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning

11-60.1-111, Definitions

11-60.1-112, General Fee Provisions for Covered sources

11-60.1-113, Application Fees for Covered sources

11-60.1-114, Annual Fees for Covered sources

11-60.1-115, Basis of Annual Fees for Covered Sources

Subchapter 8, Standards of Performance for Stationary Sources

11-60.1-161, New Source Performance Standards

Subchapter 9, Hazardous Air Pollutant Sources

Subchapter 10, Field Citations

Standard of Performance for New Stationary Sources (NSPS), 40 Code of Federal Regulations (CFR) Part 60

Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the crushing plant (manufactured in 2011) because the maximum capacity of the facility is greater than 150 tons/hour, and the crushing plant were manufactured after August 31, 1983.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is not applicable to the 350 HP diesel engine because the engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart IIII applies to stationary internal combustion engines that are not mobile/nonroad engines.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61

This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

National Emission Standards for Hazardous Air Pollutants for Source Categories (NESHAP)

(Maximum Achievable Control Technology (MACT)), 40 CFR Part 63

Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is not applicable to the 3500 HP diesel

engine because the engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not mobile/nonroad engines.

Prevention of Significant Deterioration (PSD), 40 CFR Part 52, §52.21

This source is not subject to PSD requirements because it is not a major stationary source as defined in 40 CFR §52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

Compliance Assurance Monitoring (CAM), 40 CFR 64

This source is not subject to CAM because the facility is not a major source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard.

Pursuant to 40 CFR Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.

Consolidated Emissions Reporting Rule (CERR), 40 CFR Part 51, Subpart A

CERR is not applicable because emissions from the facility do not exceed CERR triggering levels.

DOH In-house Annual Emissions Reporting

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting will be required because this facility is a covered source.

Best Available Control Technology (BACT)

This source is not subject to BACT analysis with operational limitations because potential emissions do not exceed BACT trigger levels (DE is Tier 4i with ULSD and Crushing Plant utilizes built-in wet spray systems would be BACT). BACT analysis is required for new sources or modifications to sources that have the potential to emit or increase emissions above significant levels considering any limitations as defined in HAR, §11-60.1-1.

Synthetic Minor Source

A synthetic minor source is a facility that is potentially major, as defined in HAR, §11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is a synthetic minor source because potential emissions exceed major source thresholds when the facility is operated without limitations for 8,760 hours/year (PM max 53 tn/yr).

INSIGNIFICANT ACTIVITIES / EXEMPTIONS

Fuel Tank

Diesel fuel tank

ALTERNATIVE OPERATING SCENARIOS

Diesel Engine

The permittee may replace the tier 4i diesel engine with a temporary replacement unit of similar size with equal or lesser emissions if any repair reasonably warrants the removal of the diesel

PROPOSED

engine from its site (i.e., equipment failure, engine overhaul, or any major equipment problems requiring maintenance for efficient operation). (twelve-month (12 month) Limit)

AIR POLLUTION CONTROLS

The crushing plant is equipped with a built-in water misting spay system to control fugitive dust. Water trucks/water sprays will be used as necessary to minimize fugitive dust from plant operations, material transfer points, stockpiles, and plant roads.

PROJECT EMISSIONS

Operating hours for the crushing plant will be limited to 2,500 hours in any rolling 12-month period.

253 TPH Cone Crushing Plant

The maximum capacity of the crusher was used to calculate emissions. Water sprays will be used to control PM emissions. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing.

Storage pile emissions were based on emission factors from AP-42 Section 13.2.4 (11/06) - Aggregate Handling and Storage Piles. Vehicle travel on unpaved roads emissions were based on emission factors from AP-42 Section 13.2.2 (11/06) - Unpaved Roads. A 70% control efficiency was assumed for water suppression to control fugitive dust for unpaved roads.

253 TPH Crushing Plant						
Pollutant	Crushing Plant Emissions (TPY)		Storage Piles Emissions (TPY)		Unpaved Roads Emissions (TPY)	
	2,500 hr/yr	8,760 hr/yr	2,500 hr/yr	8,760 hr/yr	2,500 hr/yr	8,760 hr/yr
PM	0.58	2.05	0.68	2.37	6.7	28.5
PM-10	0.25	0.88	0.32	1.12	1.6	5.7
PM-2.5	0.05	0.19	0.05	0.17	0.16	0.58

350 BHP Scania DC09 70 A Diesel Engine Tier 4i

The 350 HP diesel engine is fired on fuel oil no. 2 ULSD with a maximum sulfur content not to exceed 15 ppm. CO, NO_x, PM, and TOC emissions were based on manufacturer's "not to exceed" data for Tier 4i. The mass balance method was used to determine SO₂ emissions. HAP emissions were based on emission factors from AP-42 Section 3.3 (10/96) - Gasoline and Diesel Industrial Engines.

350 bhp Caterpillar Diesel Engine			
Pollutant	Emissions (lb/hr)	Emissions (TPY) [2,500 hr/yr]	Emissions (TPY) [8,760 hr/yr]
CO	0.69	0.86	3.02
NO _x	1.79	2.24	7.84
SO ₂	0.0048	0.01	0.02
PM	0.0104	0.01	0.05
PM-10	0.0104	0.01	0.05
PM-2.5	0.0104	0.01	0.05
TOC	0.01	0.01	0.05
HAPs	0.014	0.14	0.48

Total Emissions

Total facility emissions are summarized in the table below.

Total Facility Emissions and Trigger Levels (TPY)					
Pollutant	Emissions (Limited)	Emissions (No Limits 8,760 hr/yr)	BACT Significant Level	CERR Triggering Level (Type A sources / Type B sources)	DOH Level
CO	0.9	3.0	100	2,500 / 1000	250
NO _x	2.2	7.8	40	2,500 / 100	25
SO ₂	0	0	40	2,500 / 100	25
PM	8.0	28	25	-	25
PM-10	2.2	7.8	15	250 / 100	25
PM-2.5	0.3	1.09	-	250 / 100	-
VOC	0.1	0.5	40	250 / 100	25
HAPs	0.01	0.04	-	-	5

Limited 2,500 hrs

Greenhouse Gas Tailoring Rule

Title V or PSD permitting for greenhouse gas (GHG) emissions is not applicable to this facility because the potential to emit of CO₂ equivalent (CO₂e) emissions is less than 100,000 tons per year. Under the Tailoring Rule, in no event are sources with the potential to emit less than 100,000 tons per year CO₂e subject to PSD or Title V permitting for GHG emissions before 2016. Total GHG emissions on a CO₂e basis using the global warming potential (GWP) of each GHG are determined in the table below.

GHG	GWP	GHG Mass-Based Emissions (TPY)	CO ₂ e Based Emissions (TPY)
Carbon Dioxide (CO ₂)	1	503	503
Methane (CH ₄)	0	0	0
Nitrous Oxide (N ₂ O)	310	2.2	682
Total Emissions:			1185

AIR QUALITY ASSESSMENT

The applicant used Aerscreen for the air quality assessment in Section H of the application. Aerscreen is a first tier review that uses worst case meteorological assumptions and site-specific land use parameters to provide a more conservative result. Aermod uses terrain information from USGS and actual meteorological data to provide a more accurate expression of the ambient air quality impact. DOH ran check runs utilizing Aermod (terrain and met data) and the screening level capability within Aermod (terrain). The results of the check runs were generally lower than the applicants Aerscreen results.

An ambient air quality impact assessment (AAQIA), screening level, was performed for the 350 HP diesel engine powering the 253 TPH mobile crusher to demonstrate compliance with State and National ambient air quality standards. The AERSCREEN model was used for the analysis to determine maximum pollutant impacts. US EPA AERSCREEN, Version 11126, was used for the screening level modeling analysis. The ozone limiting method (OLM) for NO₂ was used within AERSCREEN with the NO_x ratio set at 0.20. Downwash was also used within AERSCREEN. ULSD fuel oil no. 2 is used to control SO_x.

MAKEMET subprogram addresses meteorology and surface characteristics

Surface terrain was flat with no terrain elevations

Surface characteristics Albedo = 0.18, Bowen ratio = 0.8 and Roughness length = 0.10 meter

Minimum temperature = 294.3K, Maximum temperature=305.4K

Minimum wind speed = 0.5m/s, default

Anemometer height = 10.00meter, default

Receptor Grid

Receptor grid spacing was set at twenty-five (25) meters out to 5,000 meter distance.

Workspace area around crushing plant set at twenty-five (25) meters.

Dispersion Coefficient

Rural dispersion coefficient was selected.

Building Downwash

The EPA's Building Profile Input Program (BPIP) was used to evaluate downwash effects based on the plants track area dimensions.

Height 2.5m

Length 3.6m

Width 2.7m

Emission Rates and Stack Parameters

The short term emission rates and stack parameters used in the analysis are shown in the table below.

Source	Emission Rates (g/s)					Stack Parameters			
	CO	NO _x	PM-10	PM-2.5	SO ₂	Height (m)	Diameter (m)	Flow Rate (m ³ /s)	Temp (°K)
Diesel Engine Generator	0.085	0.135	0.0014	0.0014	0.0051	3.8	0.108	0.95	793

Results

The annual concentrations assume annual fuel limits equivalent to 2,500 hours/year. The table below shows the predicted ambient air quality impacts from the mobile crusher with diesel engine generator should comply with State and National ambient air quality standards

Predicted Ambient Air Quality Impacts							
Air Pollutant	Averaging Time	Impact (µg/m ³)	Background (µg/m ³)	Total Impact (µg/m ³)	SAAQS (µg/m ³)	NAAQS (µg/m ³)	Compared to SAAQS
CO	1-hr	300	2404.5	2704	10000	40000	27%
	8-hr	210	1145	1355	5000	10000	27.1%
NO ₂	1-hr ⁴	134.2	41	175		188	93.1%
NO ₂	Annual	20.3	7.5	27.8	70	100	39.8%
PM-10	24-hr	2	33	35	150	150	23.3%
	Annual	0.3	14	14.3	50	-	28.6%
PM-2.5	24-hr	2	14	16	-	35	45.6%
	Annual	0.3	5.7	6	-	15	39.9%
SO ₂	1-hr ⁴	17.9	44	61.9		195	31.5%
SO ₂	3-hr	16.1	31.2	47.6	1300	1300	3.7%
	24-hr	7.1	11.4	18.5	365	365	5.1%
	Annual	1.0	2.9	3.9	80	80	4.8%

notes:

1. EPA scaling factors of 0.9, 0.7, and 0.4 for the 3-hour, 8-hour, and 24-hour concentrations are used, respectively. State of Hawaii scaling factor of 0.2 is used for annual concentrations.
2. Background concentrations from 2010 Hawaii Air Quality Data. Maximum background concentrations for CO, NO₂, SO₂ and PM taken from Kapolei, Oahu (2010). PM-2.5 98th percentile used.
3. NO_x ratio of 0.20 used for 1-hr OLM analysis.
4. 1-hr NO₂ and SO₂ values also in ug/m³.

SIGNIFICANT PERMIT CONDITIONS

1. The total operating hours of the 253 TPH mobile crushing plant and 350 HP diesel engine is limited to 2,500 hours per year, therefore an hour meter shall be required.
2. The 350 HP Tier 4i diesel engine shall be fired only on fuel oil no. 2 with a maximum sulfur content not to exceed 15 ppm as required by the manufactures specifications.
3. The permittee shall not cause to be discharged into the atmosphere from the crusher, fugitive emissions which exhibit greater than twelve (12) percent opacity (construction after April 22, 2008).
4. The permittee shall not cause to be discharged into the atmosphere from any transfer point on the belt conveyors, screening operation, or from any other affected facility, fugitive emissions which exhibit greater than seven (7) percent opacity (construction after April 22, 2008).

CONCLUSION

Powerscreen of California application is for an initial permit to operate a 253 TPH mobile track mounted crushing plant in with built-in screen powered by a 350 HP Tier 4i diesel engine. Built-in water sprays will be used to control fugitive emissions. Potential emissions were based on the maximum rated capacities of the equipment.

The air quality assessment of the Tier 4i diesel engine demonstrated compliance with State and National ambient air quality standards. Recommend issuance of the covered source permit subject to the incorporation of the significant permit conditions, 30-day public comment period, and 45-day Environmental Protection Agency review period.

Gary Siu
September 2012